

HAPLOID PLANTS IN THE JAPANESE MORNING GLORY

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The occurrence of haploid plants in the Japanese morning glory, *Pharbitis Nil*, has already been reported by U (1930, 1932), who found them in F_1 from some crosses.

In the summer of 1934, the writer also obtained three haploid individuals from a wrinkled strain, two of which were found in a pure population of this strain and the other in F_1 from crosses with other strains in which the wrinkled was used as the female. It is known that the wrinkled strain shows somewhat low fertility, the wrinkled gene sometimes reverting to normal (Imai, 1927).

The three haploids were equally slender in appearance compared with the diploids, as in other haploid plants (Fig. 1). The PMC of the haploids and diploids were fixed in Carnoy's fluid and preserved in 70 per cent alcohol, and later observed by means of the acetocarmine method.

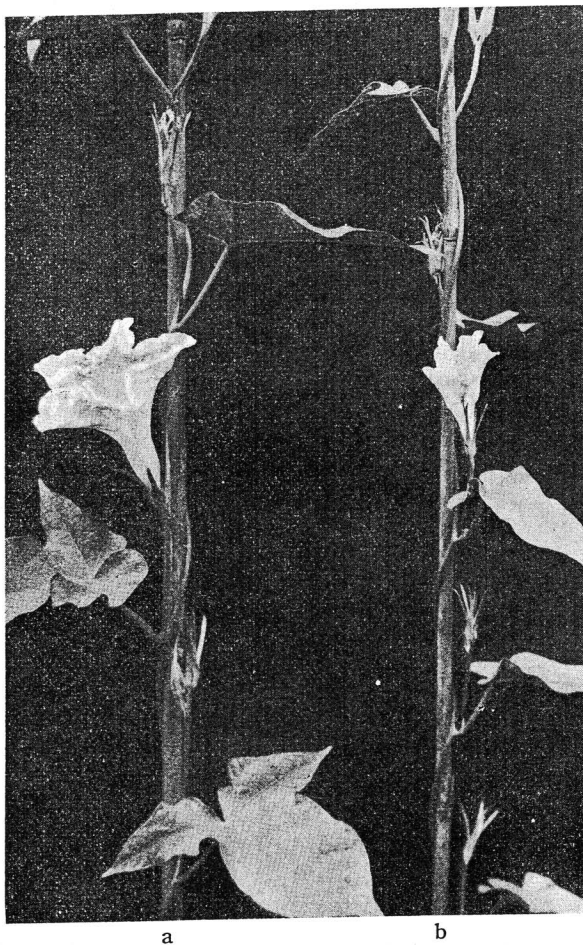
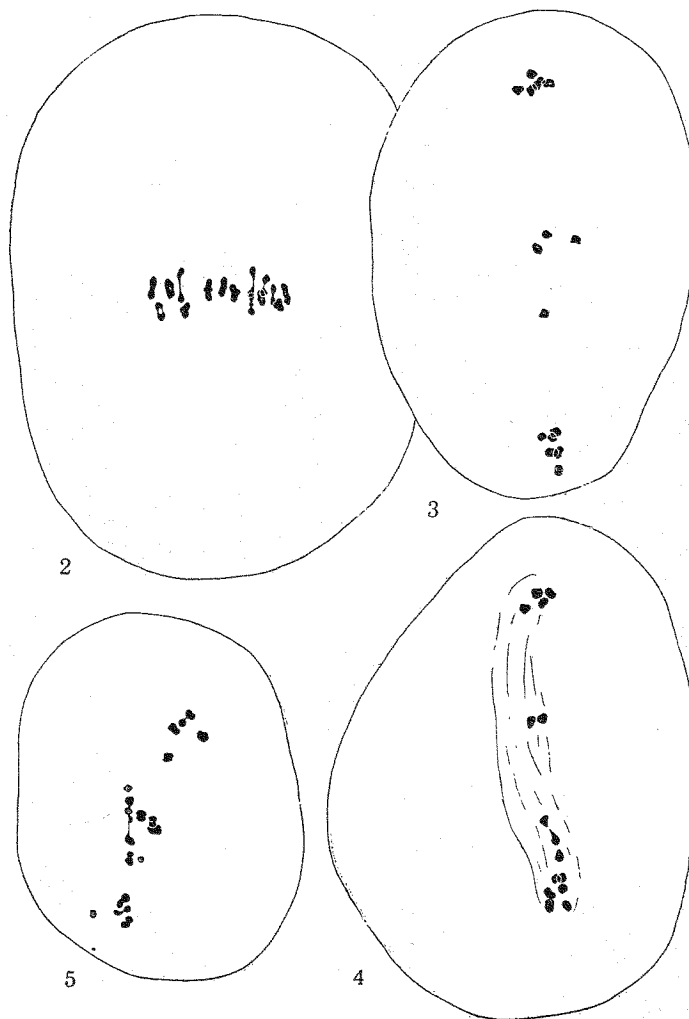


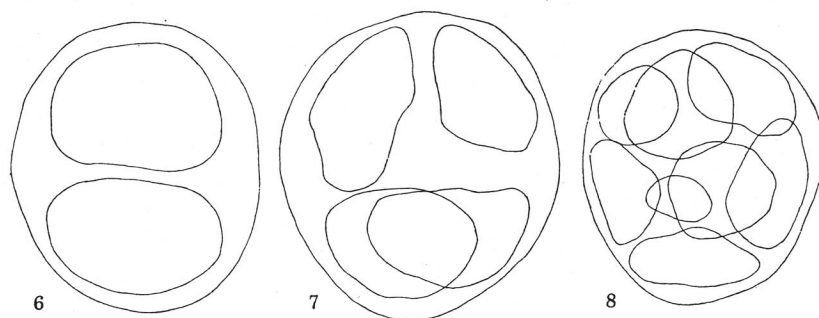
Fig. 1. a, wrinkled diploid. b, wrinkled haploid.

In the first meiotic division of the haploids, fifteen univalent chromosomes were distributed irregularly in the figure. Occasionally, a bipartite chromosome was found in the PMC. Sometimes certain univalents separated to monads, notwithstanding the bipartite was still visible, although the univalents usually separated homotypically at the second division. The

above mentioned facts from the haploid plants are shown in Figs. 3-5. Fig. 2 presents a first meiotic metaphase of the diploid. In general, the univalent chromosomes did not make a nuclear plate in the metaphase: they directly entered the anaphase stage from the condition that they were distributed at random in the early metaphase. The similar behaviour of univalent chromosomes in haploids was generally discussed elsewhere (cf. Katayama, 1935).



Figs. 2-5. First meiotic metaphases from diploid (2) and haploid (3-5) plants. \times ca. 1000.
2, 15 bivalents; 3, 15 univalents; 4, 13 univalents and one bipartite; 5, one bipartite, 11 univalents and 4 monads.



Figs. 6-8. Young pollen cells irregularly formed in haploids. \times ca. 550. 6, dyad; 7, tetrad; 8, polyad.

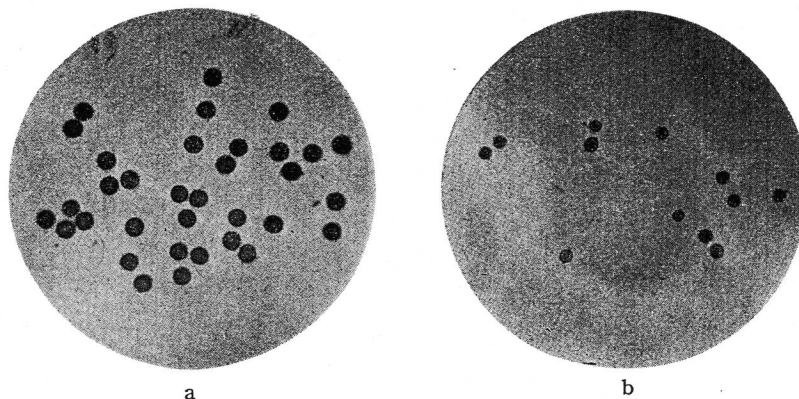


Fig. 9. Photographs of pollen grains from diploid (a) and haploid (b) plants.

As the result of the irregular division, the number of cells varied usually from dyads to polyads in the pollen tetrads (Figs. 6-8). The anthers contained only a few shrivelled pollen, which were small and almost devoid of contents (Fig. 9). The anthers did not open and usually the pistil undeveloped. Consequently, these three haploids failed to produce any seed by natural pollination.

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